

M. SC. (Organic Chemistry) Sem-III (Choice Based Credit & Grade System) : WINTER - 2018

SUBJECT: ADVANCED STEREOCHEMISTRY

Day: Wednesday  
Date: 24/10/2018

W-2018-0993

Time: 03.00 PM TO 06.00 PM  
Max. Marks: 60

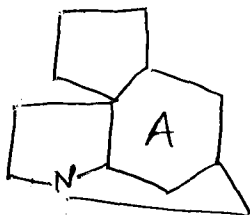
N.B:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answer to the both sections should be written in **SEPARATE** answer book.

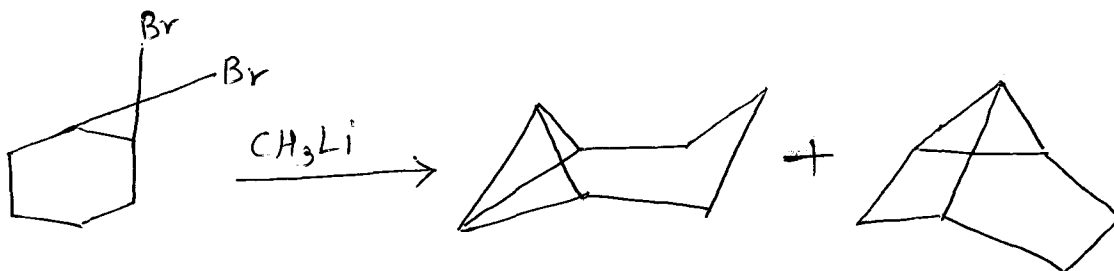
SECTION - I

Q.1 Attempt **ANY THREE** of the following: [15]

- a) Draw conformational stereostructures of the trans-anti-trans and cis-anti-trans perhydrophenanthrenes. Calculate their energy in terms of butane-gauche interactions and explain optical activity.
- b) Assuming ring 'A' is a chair deduce the stereochemistry of the compound shown below. Draw its stereostructure.

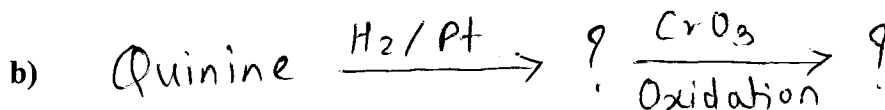
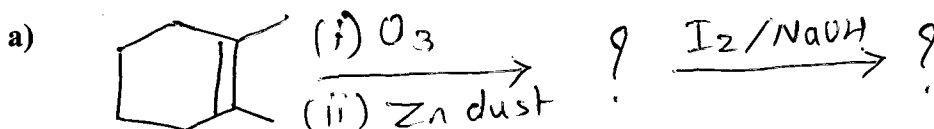


- c) Give IUPAC names for reactant and products in the following reaction.

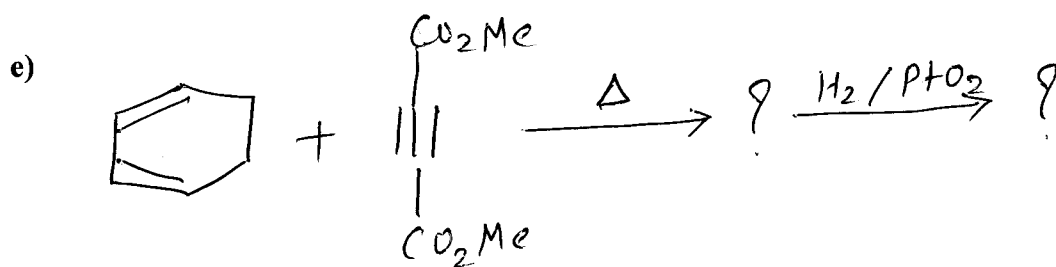
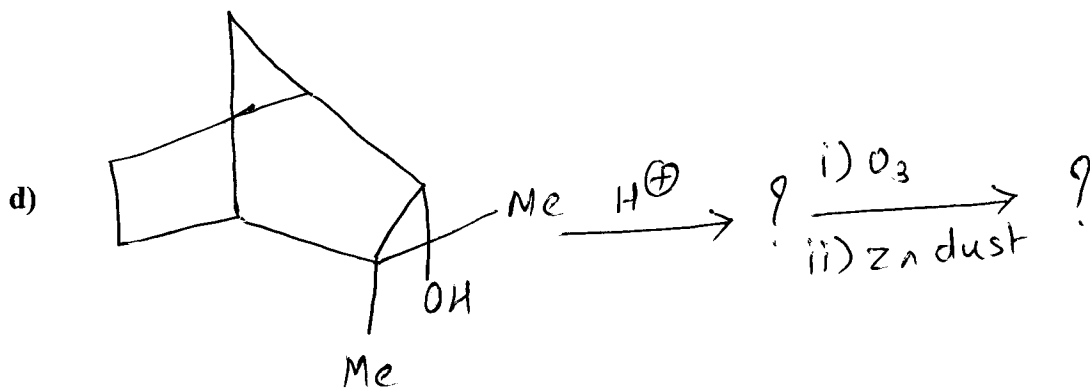
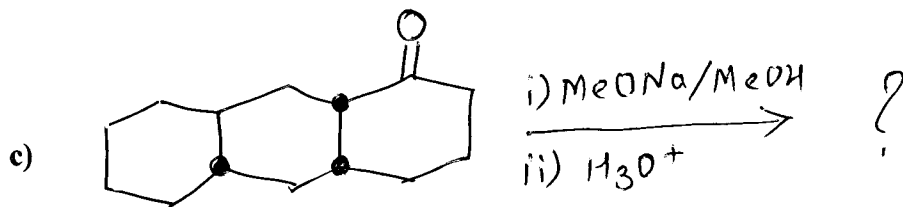


- d) Write a note on Bredt's rule.
- e) Draw the stereostructure of morphine and mention chiral centers.

Q.2 Predict the product/s in **ANY THREE** of the following and discuss the [15] stereochemical principles involved in them.



P.T.O.

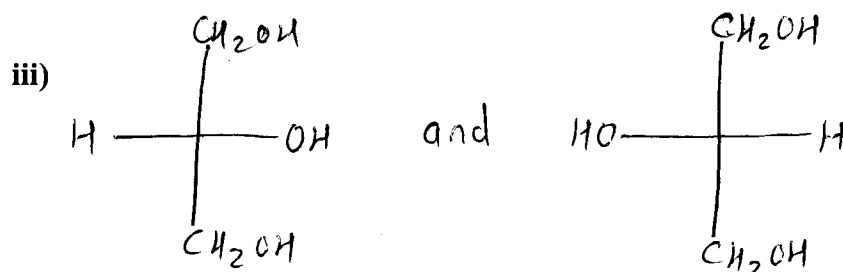
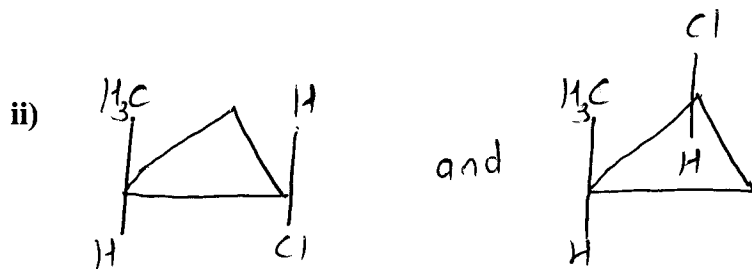
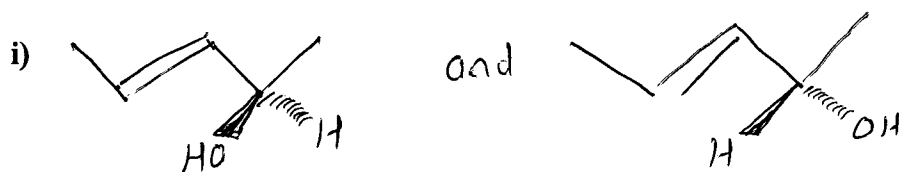


## SECTION - II

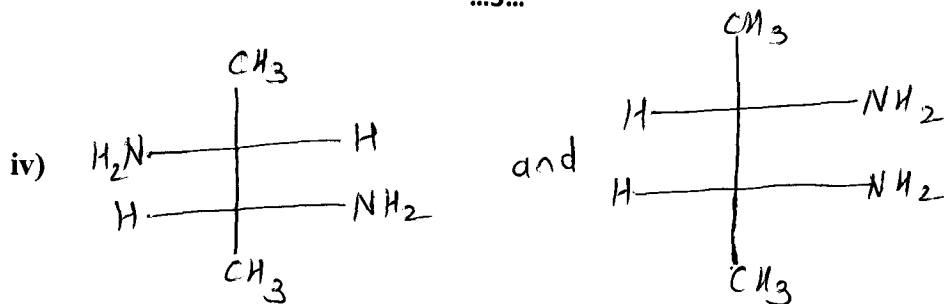
Q.3 Attempt **ANY THREE** of the following:

[15]

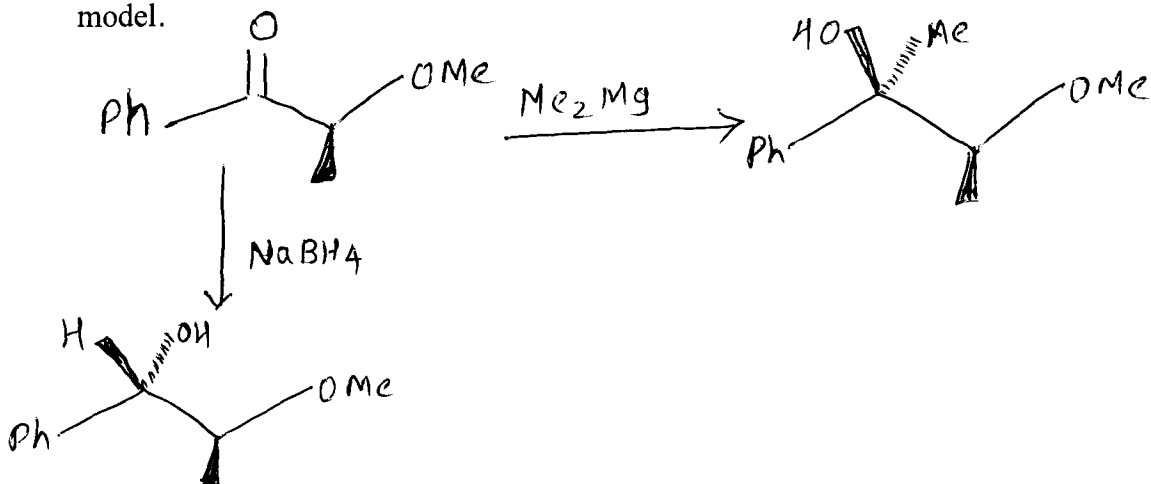
- a) Identify the relationship in each of the following indicate whether each of the following pairs of compounds are identical, enantiomer, diastereomer or constitutional isomers.



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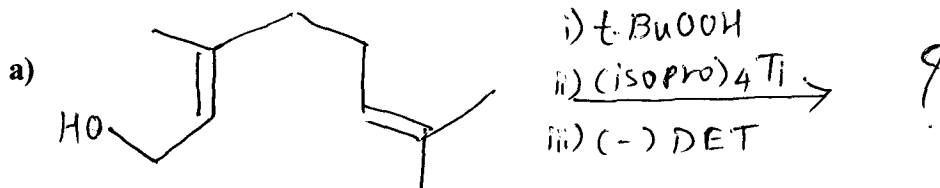


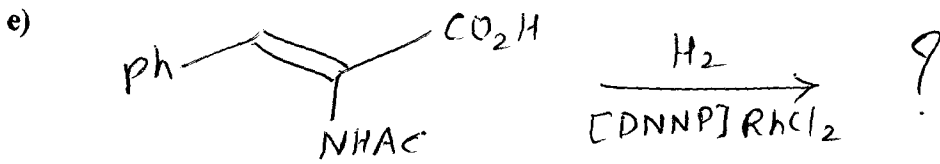
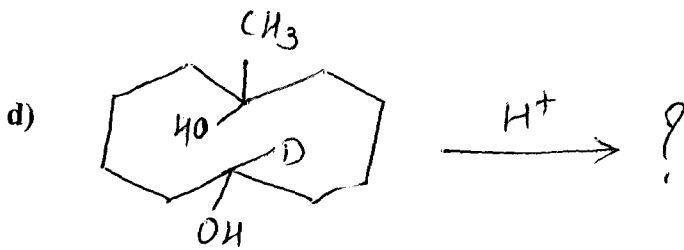
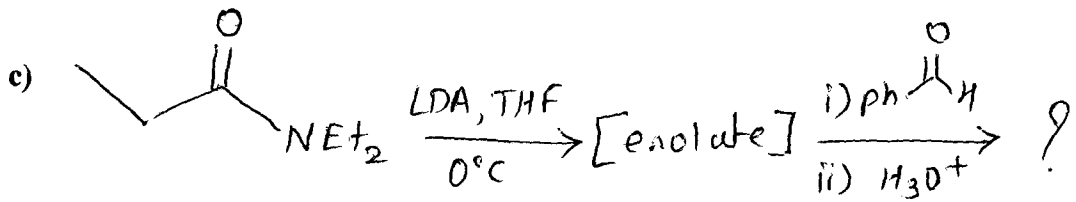
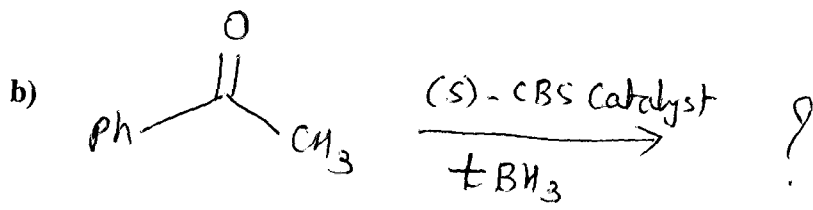
- b) Pure cholesterol has a specific rotation of  $-39.0^\circ$ . A solution of a cholesterol sample (0.187 g/ml) has an observed rotation of  $-6.52^\circ$  when placed in a polarimeter tube 10 cm. long. What is the percentage optical purity of the cholesterol in the sample?
- c) What are Chiral auxiliary? Give characteristic properties of good Chiral auxiliary.
- d) Explain the following observation by using Felkin-Anh mode and chelation model.



- e) Explain the concept "Transannular reaction" with suitable examples.

Q.4 Predict the product/s in ANY THREE of the following. Draw the [15] stereoisomers of products. Justify your answer.





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